

REMARKS

Claims 1-2, 4-11 are all the claims pending in the application. Claim 2 is being amended, and claims 12-15 are being added.

I. Title

The Examiner requested a new title that clearly indicates the invention to which the claims are directed. Therefore, the Applicant has amended the title to “DRIVE UNIT AND INVERTER WITH COOLING TECHNIQUE.” The Applicant believes the title is now sufficiently descriptive.

II. Claim Rejections: 35 USC §103

The Examiner rejected claims 1, 2, 5, 6, 7, and 9-11 under 35 USC §103(a) as being unpatentable over Hara et al. (Hara), US 6,323,613, in view of Regnier et al. (US 6,323,566) (Regnier). The Applicant respectfully traverses the rejections.

Claim 1

The Examiner states that Regnier teaches the optimized heat passage V on either [side] formed by cooling fins which taper to a point, and concludes that it would have been obvious to taper cooling fins of the heat sink in contact with the drive unit to increase the surface areas in which the heat is dissipated to the coolant.

The Applicant respectfully disagrees, and submits that unlike Regnier, the claimed invention has line contact between the fins and the casing, which is in a state of low thermal conduction and reduces the heat conduction of the drive unit casing and the heat-sink side fins. The line contact is illustrated in Fig. 2. Therefore, the shape of the passage formed by the cooling fins in Regnier is irrelevant to the claimed invention, as it is the line contact that reduces heat conduction. Regnier does not disclose or teach line contact between the fins and the casing, as it is focused on the shape of the fins to create optimal flow of coolant. Therefore, neither Hara nor Regnier, taken alone or in combination, disclose, teach or provide motivation to provide line contact between the heat-sink side fins and the drive unit casing, as in claim 1. For at least these reasons, the Applicant respectfully requests that the rejection of claim 1 be withdrawn.

Claim 2

The Applicant herein amends claim 2 to better embody that which the Applicant regards as the invention. Specifically, claim 2 now describes an inverter casing that accommodates the inverter, as described in paragraph [0041] and Figs. 2 and 3 of the published application, US 2005/0253465 A1. In addition, claim 2 now describes how the separation means (61) is positioned specifically between the mating surface of the inverter casing (5) and the mating surface of the drive unit casing (2), as set forth in paragraph [0049] and Fig. 8 of the published application. The separation means (61) arranged in this manner serves to prevent heat from conveying directly from the inverter casing to the drive unit casing. Hara and Regnier both lack separation means positioned on the mating surface of the inverter casing and drive unit casing, and therefore do not obviate the elements of claim 2. There is no teaching, suggestion, or

motivation to provide a separation means between the mating surface of the inverter casing and drive unit casing in either Hara or Regnier. For at least this reason, the Applicant requests that the rejection of claim 2 be withdrawn.

New Claims 12-15

The Applicant herein submits new claims 12-15, which further depict aspects of the invention that are patentable over the cited art.

With regard to claim 12, the Applicant submits that neither Hara nor Regnier, taken alone or in combination, disclose or provide motivation for a mount (20) of a drive unit casing (2) that is flat. The flat mount (20) is supported in Fig. 6 of the present application, and has the effect of occupying the contact area with the refrigerant of the heat-sink side fins while reducing the thermal influence of the drive unit.

With regard to claim 13, the Applicant submits that neither Hara nor Regnier, taken alone or in combination, disclose or provide motivation for wherein both heat-sink side fins (56) and drive-unit casing side fins (22) cooperatively generate a common refrigerant flow pattern, as set forth in paragraph [0052] and Fig. 11 of the present application. The effect of this refrigerant flow pattern prevents stagnation by preventing generation of interference in the refrigerant flow.

With regard to claim 14, the Applicant submits that neither Hara nor Regnier, taken alone or in combination, disclose or provide motivation for providing separation means (6) on the mating surface of a peripheral wall (55) of the inverter casing (5) and a drive unit casing (2), as set forth in paragraph [0049] of the present application.

With regard to claim 15, the Applicant submits that neither Hara nor Regnier, taken alone or in combination, disclose or provide motivation for heat-sink side fins (56) and the peripheral wall (55) being formed as a unit, as shown in Fig. 8 of the present application.

Claims 5-11

With regard to claims 5-11, the Applicant refers the Examiner to the arguments presented above with regard to claim 2, and submits that as claims 5-11 all depend from claim 2, they are at least allowable based on their dependency.

III. Allowable Subject Matter

The Applicant thanks the Examiner for the indication of allowable subject matter in Claim 4, and submits that for at least the reasons stated above, the remaining pending claims are allowable as well. The Applicant respectfully requests timely allowance of the remaining claims.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.114(c) & § 1.121
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Respectfully submitted,

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